

On the identities of two Pacific species of deep-water porter crabs, *Hypsophrys longirostris* Chen, 1986, and *Homologenus donghaiensis* Chen, 1986 (Crustacea: Decapoda: Brachyura: Homolidae)

Peter K. L. Ng and H.-L. Chen

(PKLN) Department of Biological Sciences, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore; (H-LC) Institute of Oceanology, Chinese Academy of Sciences, 7 Nan-Hai Road, Qingdao 266071, People's Republic of China

Abstract.—The identities of two species of poorly known deep-water homolid crabs, *Hypsophrys longirostris* Chen (presently in the genus *Lamoha*) and *Homologenus donghaiensis* Chen from the East and South China Seas are clarified. The publication validating these taxa is not well circulated, and both names have been missed by most carcinologists. *Hypsophrys futuna* Guinot & Richer de Forges, described from the Wallis and Futuna Islands in the central Pacific, is shown to be a junior synonym of *Lamoha longirostris*.

Chen (1986) published a short abstract in Chinese on the deep-water homolids from the East China Sea in the proceedings of a meeting of the Chinese Crustacean Society. The text of this short abstract listed five species: *Homola orientalis* Henderson, 1888, *Paromola macrochira* Sakai, 1961, *Paromolopsis boasi* Wood-Mason & Alcock, 1891, and two new species, *Hypsophrys longirostris* and *Homologenus donghaiensis*. The two new species were treated separately, with their key characters highlighted, albeit very briefly by Chen (1986). Although no specimens were mentioned or sizes indicated in Chen (1986), her two names are nevertheless valid under the International Code of Zoological Nomenclature (1985). Chen had treated the abstract only as a provisional document in the proceedings of a local meeting and did not regard it as a scientific publication or the names as having any validity. She had originally intended to formally describe both species in a full paper later on, but for various reasons, this was never done. The proceedings of the meeting was not easily available outside China and as such, has been missed by most carcinologists.

Since Chen's (1986) publication, many species of homolids have been described from the Pacific in the important revision by Guinot & Richer de Forges (1995). Unfortunately, Guinot & Richer de Forges (1995) were not aware of Chen's (1986) abstract. In any case, full descriptions and figures of the two species in question were not provided by Chen (1986), and it would not have been possible to ascertain the actual identities of *Hypsophrys longirostris* and *Homologenus donghaiensis* just from her brief text.

The present paper clarifies the outstanding taxonomic problems with Chen's (1986) two taxa, *Hypsophrys longirostris* and *Homologenus donghaiensis*. Both species are redescribed based on Chen's (1986) original material, figures provided and types designated. Measurements indicated are of the carapace length (tip of rostrum of posterior carapace margin) and width (maximum, between tips of lateral-most spines) respectively. The terminology used follows Guinot & Richer de Forges (1995). The abbreviations P1–5 refer to the pereopods (P1, cheliped; P2–5, first to fourth ambulatory legs respectively). Specimens exam-

ined are deposited in the Institute of Oceanology, Chinese Academy of Sciences, Qingdao (IOCAS); Taiwan Museum, Taipei (TMCD); Muséum national d'Histoire naturelle, Paris (MNHN); and Zoological Reference Collection of the Raffles Museum, National University of Singapore (ZRC).

Systematic Account

Family Homolidae

Genus *Lamoha* Ng, 1988a

Type species.—*Hypsophrys superciliosa* Wood-Mason, in Wood-Mason & Alcock, 1891.

Remarks.—The better known generic name *Hypsophrys* Wood-Mason & Alcock, 1891, was found by Ng (1998a) to be preoccupied by *Hypsophrys* Agassiz, 1859, a genus of American freshwater fish, and Wood-Mason & Alcock's name was replaced by *Lamoha* Ng, 1998a. Nine species of *Lamoha* are now recognized from the Indo-Pacific and Atlantic (Guinot & Richer de Forges 1995; Ng 1998a, 1998b).

Lamoha longirostris (Chen, 1986)

Figs. 1, 2

Hypsophrus longirostris Chen, 1986:227 (misspelling of *Hypsophrys*).

Hypsophrys futuna Guinot & Richer de Forges, 1995:456, figs. 611, 66a, g.

Material examined.—Lectotype male (22.7 by 18.2 mm) (IOCAS KY8B-73), East China Sea, 28°45'N, 127°30'E, 900 m, on soft mud, coll. 3 Jan 1981.

Paralectotypes.—1 male (23.5 by 19.0 mm) (ZRC 1999.007), same data as lectotype. 1 male (21.2 by 18.0 mm), 1 ovigerous female (22.0 by 18.5 mm) (IOCAS K69B-30), South China Sea, 19°00'N, 113°30'E, 1100 m, on soft mud, 13 Jul 1959.

Others.—2 males (18.3 by 14.8 mm, 14.6 by 11.7 mm), 1 female (23.7 by 17.6 mm), paratypes of *Hypsophrys futuna* Guinot & Richer de Forges, 1995: MURSORSTOM 7, station CP 623, Wallis and

Futuna Islands, 12°5'S, 178°11.5'W, 1300 m, 28 May 1992 (MNHN B-24696). 1 male (24.7 by 19.0 mm) (TMCD), 1 male (26.3 by 20.5 mm) (ZRC 1999.410), Tungsha Islands, South China Sea, 1265 m, 25 Apr 1996, coll. P.-H. Ho.

Description.—Carapace longitudinally subrectangular, regions clearly defined (Fig. 1a). Entire carapace and pereopod surfaces with scattered stiff, simple setae which do not obscure margins or surface, those on lateral surfaces longer, those on dorsal surface very short. Rostrum well developed, simple, slightly bent downwards, dorso-medial part furrowed; lateral margins gently converging to rounded tip (Fig. 1a, b, f, g). Pseudorostral spines absent (Fig. 1a, f). Supraorbital margin sinuous, without spine but with low subdentiform median lobe (Fig. 1a, f). Basal part of eyestalk dilated, outer surface finely granular (Fig. 1a, f). Anterolateral margin with 1 short but distinct, slightly curved lateral spine. Posterolateral margin weakly convex, finely granulated (Fig. 1a). Posterior margin of carapace weakly concave (Fig. 1a). Protogastric and epigastric regions with scattered low granules. Mesogastric and metagastric regions unarmed. Branchial regions covered with scattered coarse granules (Fig. 1a). Antennal spine strong, anteriorly directed. Subhepatic region with 1 large, anteriorly directed inner spine and 1 small, often small outer spine or granule; subventral surface with small, sharp spiniform or very low granule (Fig. 1b, g). Posterior part of pterygostomial region covered with small granules (Fig. 1a, b, g). Gastro-cervical groove deep, contiguous medially, meeting below distinct gastric pits. Branchio-cardiac groove deep. Linea homolica distinct, sinuous (Fig. 1a). Basal antennal article unarmed. Antennular peduncle subglobular, unarmed. Proepistome with low, subtruncate lamelliform tooth, otherwise unarmed (Fig. 1b, g). Merus of third maxilliped unarmed, almost smooth; ischium subrectangular; palp when appressed against ischium reaching to proximal margin of ischium;

exopod slender, reaching to 1/3 length of outer margin of merus, with long flagellum (Fig. 1b).

P1 (chelipeds) subequal, elongate, relatively slender (Fig. 1c). Basis-ischium 3-faceted; inner surface distinctly granular, other surfaces almost smooth; inner ventral margin with 4 distinct spines and 1 small distal spinule; outer ventral margin with 2 spines; dorsal margin with 2 spines (Fig. 1c). Merus with all margins distinctly spiniform; inner surface granular; outer and ventral surfaces almost smooth. Surfaces of carpus spiniform, with 2 large spines on inner distal angle (Fig. 1c). Outer and inner surfaces of palm with numerous spines and spinules; inner surface with 1 distinct longitudinal row of strong spines (Fig. 1c). Fingers elongate, distal part gently curving inwards, anterodorsal margin of dactylus flattened; cutting edge of dactylus with 1 distinct subproximal, obliquely directed tooth which fits anterior to distinct proximal tooth on cutting edge of pollex, rest of cutting edges of both fingers blade-like (Fig. 1c, h). Inner and outer surfaces of base of pollex of both chelae with large ovate pigmented spot each (Fig. 1c, h).

P2 and P3 longest. Coxa of P2–P5 unarmed. Dorso-distal margin of basis-ischium of P2–P5 with 2 small spines bracketing merus. Dorsal margin of M2–4 with 14 or 15 distinct spines, distal 0.14–0.17 of segment usually unarmed; proximal part of ventral margin with 2 rows of spines which converge into 1 uneven row of spines along distal part; anterior surface granular; posterior surface almost smooth. Distal edge of propodus with 2 stiff, movable setae bracketing proximal edge of dactylus. Ventral margin of dactylus with row of stiff but movable setae. P5 very slender; when merus articulated forwards, distal end reaching to base of anterolateral spine; all segments unarmed; hooked dactylus and distal part of propodus forming distinct subchelate structure (Fig. 1d).

Male and female abdomens covering entire thoracic sternum; female abdomen

slightly broader than male abdomen (Fig. 1e); surfaces of all segments and telson almost smooth; telson subtriangular, lateral margins sinuous, with distal part weakly concave, and proximal part convex (Fig. 1e, i).

Male first pleopod stout, relatively straight; distal part dilated into distinct flap (Figs. 1j, 2a, b). Male second pleopod stout, short, distally cupped (Fig. 1k).

Remarks.—*Lamoha longirostris* was described by Chen (1986) as *Hypsophrys longirostris* without designating types or indicating the number of specimens available. The original syntype series consisted of three males and a female. One of the male specimens from the East China Sea is here designated as the lectotype. *Lamoha futuna*, as *Hypsophrys futuna*, was described by Guinot & Richer de Forges (1995) from three males and two females collected from the Wallis and Futuna Islands in the central Pacific.

Although all the known male specimens of *L. futuna* are relatively small, the largest male specimen being the holotype measuring 18.0 by 15.0 mm; and the present male specimens of *L. longirostris* from the East and South China Seas are all much larger than the holotype male of *L. futuna*, we could discern no major differences between the two taxa. As such, we here regard *Lamoha futuna* (Guinot & Richer de Forges, 1995) as a junior subjective synonym of *Lamoha longirostris* (Chen, 1986).

In describing their species, Guinot & Richer de Forges (1995:444) recognized two main groups of *Hypsophrys*, but felt that *H. superciliosa* Wood-Mason & Alcock, 1891, and *H. futuna* (= *L. longirostris*) had intermediate characters which excluded them from either group. *Lamoha superciliosa* and *L. longirostris* are distinguished from all other *Lamoha* species in having the merus of the last ambulatory leg completely unarmed and the rostrum being simple (i.e., not bifurcated at the tip) (Fig. 1a, f). Guinot & Richer de Forges (1995:458) used three main characters to separate

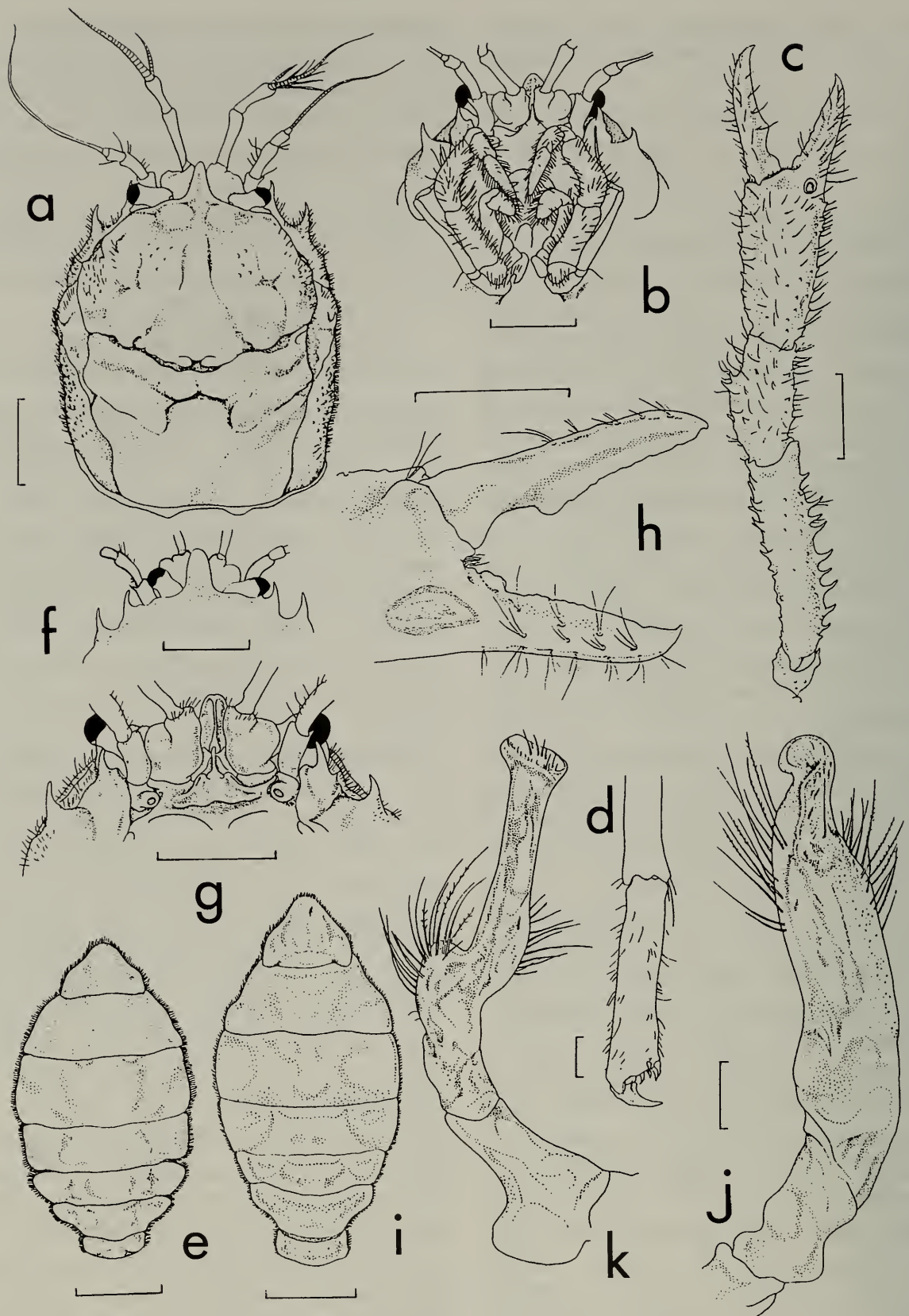


Fig. 1. *Lamoha longirostris* (Chen, 1986). a–e, paralectotype female (22.0 by 18.5 mm) (IOCAS K69B-30); f–k, paralectotype male (21.2 by 18.0 mm) (IOCAS K69B-30). a, carapace (dorsal view); b, buccal cavity showing third maxillipeds; c, right cheliped (outer view); d, subchelate dactylus and propodus of P5; e, abdomen; f, frontal region of carapace; g, epistome, orbit, antennae and antennules; h, distal end of left chela (inner view); i, abdomen; j, left male first pleopod (ventral view); k, left male second pleopod (dorsal view). Scales equal 5.0 mm (a, b, e, g–i), 1.0 mm (c, d, f), 0.5 mm (j, k).

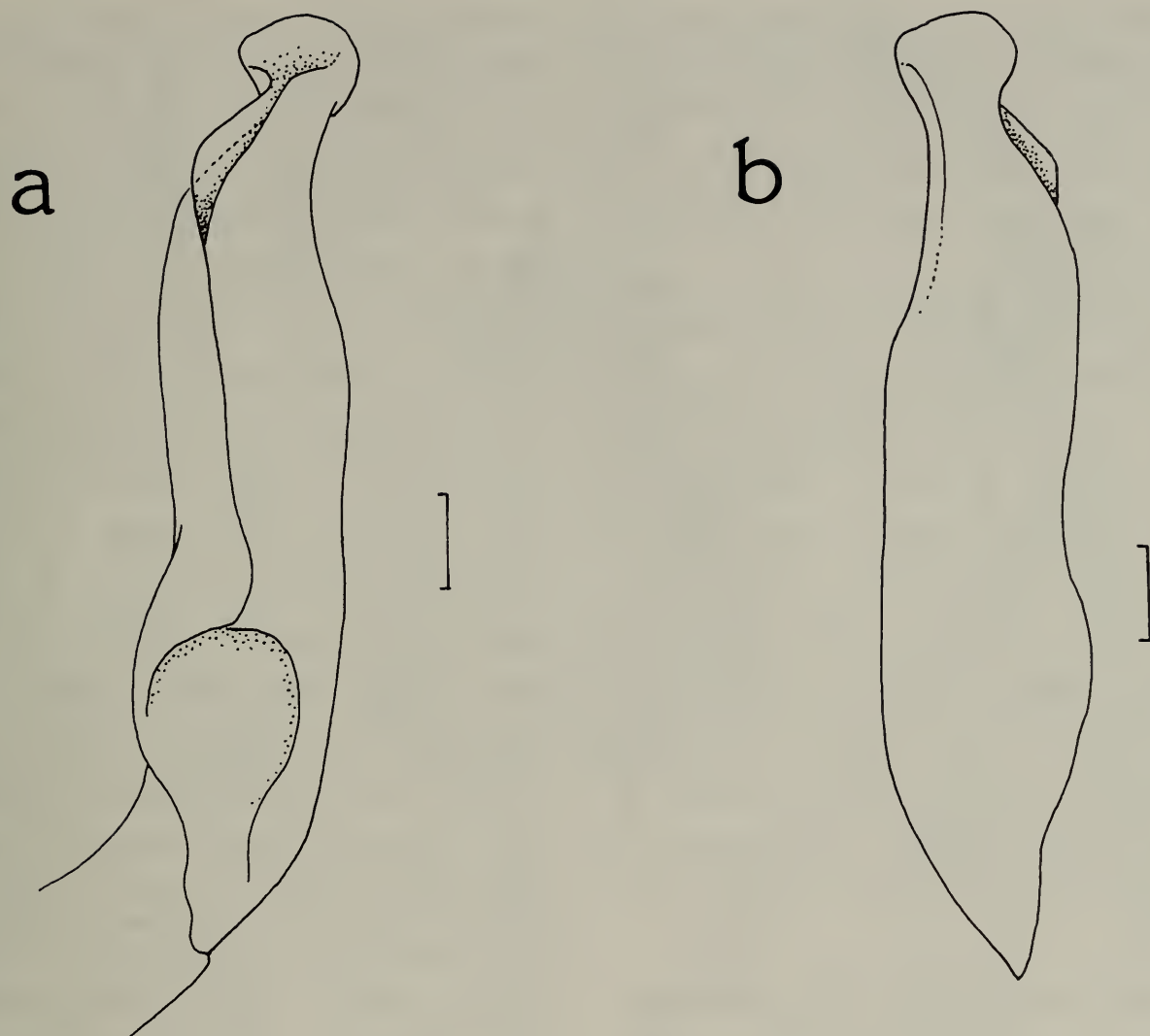


Fig. 2. *Lamoha longirostris* (Chen, 1986). Male (18.3 by 14.8 mm), paratype of *Hypsophrys futuna* Guinot & Richer de Forges, 1995 (MNHN B-24696). Left male first pleopod (setae not drawn). a, ventral view; b, dorsal view. Scales equal 0.5 mm.

L. longirostris from *L. superciliosa*: subhepatic region with one spine (Fig. 1a, b, f, g) (two spines in *L. superciliosa*), proto-gastric region smooth (Fig. 1a) (with some short spinules in *L. superciliosa*), and absence of a spine on the supraorbital margin (Fig. 1a, f) (present in *L. superciliosa*). These characters are evident on all the specimens examined.

The two pigmented spots at the base of the pollex on the inner and outer surfaces of each chela are large and distinctive (Fig. 1c, h) in *Lamoha longirostris*. In the freshly preserved specimens (in 70% ethanol) from the Tungsha Islands, they are dark blue in the center and bluish along the edges. The spots in the types of *L. longirostris* and Tungsha specimens are much larger than

those figured by Guinot & Richer de Forges (1995:fig. 66g) and on the types of *L. futuna* examined, but this is probably associated with size. As noted above, the South and East Chinese Seas specimens are larger than the holotype male of *L. futuna* available to Guinot & Richer de Forges (1995).

The type specimens of *L. longirostris* from the East and South China Seas vary in several features, none of which are regarded as significant. The lateral margins of the rostrum are subparallel in the paralectotype male (ZRC 1999.007) from the East China Sea but gently converging distally in the lectotype male (IOCAS KY8B-73). The pteryogostomial region has a small sharp granule on each side in the lectotype but in

a paralectotype male (ZRC 1999.007), the right granule is spiniform while the left one is only granular. The right inner subhepatic spine of a paralectotype male (ZRC 1999.007) is bifurcated distally but all the other subhepatic spines in the other specimens are simple.

The known distribution of *L. longirostris* is disjunct, being known only from the East and South China Seas, as well as over 7500 km to the east in the Wallis and Futuna Islands. There are no other records. This, however, may be due to inadequate sampling, especially considering the depths in which this species occurs. The type specimens of *L. longirostris* were collected by trawls from a depth of about 900–1100 m. Guinot & Richer de Forges (1995:200) obtained their specimens of *H. futuna* (= *Lamoha futuna*) from 1300 m. None of the specimens were recorded carrying any object although members of this genus are known to carry sea anemones (Guinot et al. 1995).

Genus *Homologenus* A. Milne-Edwards,
in Henderson, 1888

Type species.—*Homolopsis rostratus* A. Milne-Edwards, 1880.

Remarks.—Nine species of *Homologenus* are currently known, of which one occurs in the Indian Ocean and six are present in the Pacific (Guinot & Richer de Forges 1995). *Homologenus donghaiensis* Chen, 1986, is the seventh species known from the Pacific.

Homologenus donghaiensis Chen, 1986
Fig. 3

Homologenus donghaiensis Chen, 1986:
227.

Material examined.—Holotype male (11.0 by 10.3 mm), East China Sea, 900 m, on soft mud, 3 Aug 1981 (IOCAS KY8B-71).

Description of holotype male.—Carapace longitudinally subrectangular, regions well

defined (Fig. 3a). Entire dorsal carapace surface with numerous small granules and scattered short, stiff setae which do not obscure surface (Fig. 3a). Rostrum well developed, 3-pronged; accessory spines long, directed obliquely upwards; median projection very long, reaching well beyond accessory spines, directed gently downwards. Pseudorostral spines very strong, directed laterally, reaching well beyond eyes (Fig. 3a). Supraorbital margin sinuous, granulated, inner part with very small slender spine. Basal part of eyestalk not distinctly dilated (Fig. 3a). Anterolateral margin with well developed, obliquely directed long spine; surfaces of spine finely granular. Posterolateral margin gently convex, finely granulated, some granules sharp. Posterior margin of carapace distinctly concave (Fig. 3a). Protogastric and epigastric regions with scattered low granules, those on epigastric region especially sharp. Mesogastric region with distinct, long sharp spine. Branchial regions covered with numerous small granules. Subhepatic region with 1 large, obliquely directed spine; ventral surface with oblique ridge armed with 4 or 5 small spines (Fig. 3a). Antennal spine long, directed obliquely, longer than subhepatic spine. Pterygostomial and sub-branchial regions covered with small granules. Gastro-cervical groove shallow but discernible (Fig. 3a). Branchio-cardiac groove very broad, shallow, hardly discernible. Linea homolica sinuous (Fig. 3a). Basal antennal article unarmed; peduncle with opening for gland directed inwards. Antennular peduncle subglobular, with 3 spinules. Proepistome with low, subtruncate lamelliform tooth. Anterior edge of buccal cavity with 2 small spines. Outer surfaces of third maxilliped covered with granules; merus elongate, unarmed; ischium subrectangular, granules on outer margin larger; inner margin of palp with several spinules; exopod slender, reaching to mid-point of outer margin of merus, with long flagellum (Fig. 3f).

P1 (chelipeds) subequal, elongate, slender; surfaces covered with numerous short,

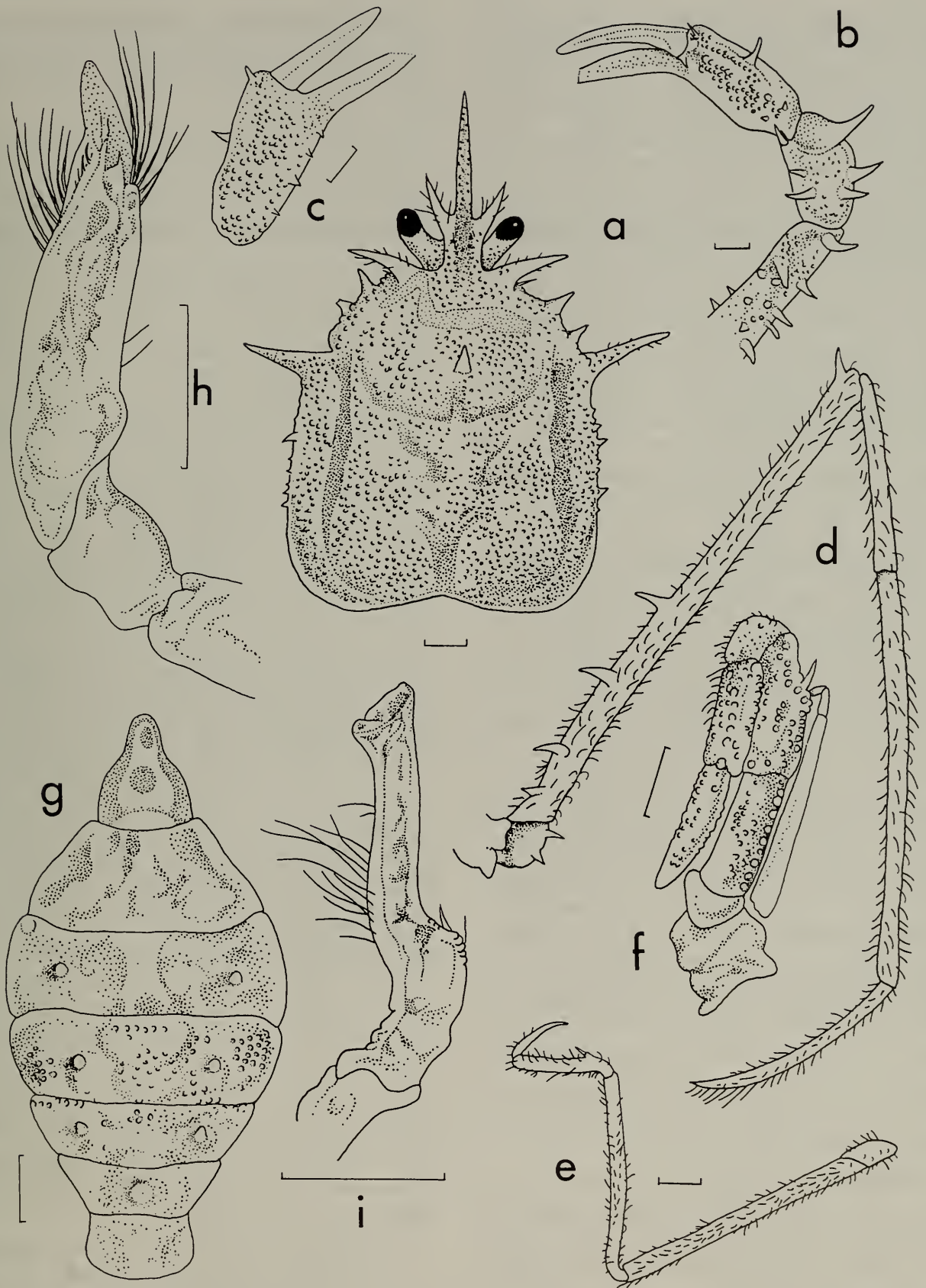


Fig. 3. *Homologenus donghaiensis* Chen, 1986. Holotype male (11.0 by 10.3 mm) (IOCAS KY8B-71). a, carapace (dorsal view); b, right cheliped (outer view); c, right chela (outer view); d, right P2; e, right P5; f, left third maxilliped; g, abdomen; h, left male first pleopod (ventral view); i, left male second pleopod (dorsal view). Scales equal 1.0 mm.

hooked setae which do not obscure margins (Fig. 3b). Coxa with inner distal margin distinctly expanded, armed with 2 small spines. Basis-ischium with 3 spines on ventral surface; 1 spine on dorsal surface. Inner margin of merus with 5 or 6 sharp spines; outer margin with 5 spines; inner surface granular or with scattered spines. Outer surface of carpus with 2 distinct median spines and 1 long subdistal spine; inner surface with 3 evenly spaced spines; ventral surface with 1 distal spine (Fig. 3b). Outer and inner surfaces of palm with numerous granules; with 4 short spines on subventral surface; dorsal margin with 1 small distal spine and 1 longer submedian spine. Fingers elongate, cutting edges of both fingers blade-like (Fig. 3b, c).

Surfaces of P2–P5 covered with numerous short, hooked setae which do not obscure margins (Fig. 3d, e). P2 and P3 longest. Ventral surface of basis-ischium of P2 and P3 with 2 small spines (Fig. 3d). Dorsal margin of merus of P2–4 with 4 strong, posteriorly directed spines along proximal half, distal half mostly unarmed except for small subdistal spine and longer distal spine; proximalmost part of ventral margin with 2 spines with small subdistal spine (Fig. 3d, e). Basis-ischium with small spine. Carpus unarmed (Fig. d, e). P5 slender, when articulated forwards, distal edge of merus reaching to gastric spine; merus and carpus unarmed; propodus with a strong knob on proximoventral margin which is tipped with large, slightly movable seta; curved dactylus and propodus forming subchelate structure (Fig. 3e).

Abdomen covering entire thoracic sternum; surface of segment 1 weakly granular; segment 2 with large, sharp median granule; surfaces of segments 3–4 with large, sharp granule on side of each segment, rest of surface with scattered low granules; segment 5 with 2 groups of submedian granules; surfaces of segment 6 and telson almost smooth; telson subtriangular, lateral margins sinuous, distal part concave and proximal part convex (Fig. 3g).

Male first pleopod stout, distal part conical, gently curved (fig. 3h). Male second pleopod stout, short, distally cupped (Fig. 3i).

Remarks.—*Homologenus donghaiensis* belongs to a group of species which have a long rostrum, a strong gastric spine and the dorsal margin of the ambulatory merus with a pronounced distal spine (Guinot & Richer de Forges 1995:470). Two species are currently known from this group, *H. malayensis* Ihle, 1912, and *H. levii* Guinot & Richer de Forges, 1995.

With regards to its unarmed ambulatory meri and long P5, *H. donghaiensis* is morphologically most similar to *H. malayensis* from Sulawesi, Ceram, Kei Islands, Philippines and possibly Japan (Ihle 1912, 1913; Guinot & Richer de Forges 1995; Nagai 1994). *Homologenus donghaiensis*, however, differs markedly from *H. malayensis* in having proportionately much longer first to third ambulatory meri (Fig. 3d) (maximum length of P4 merus is ca. 33 times maximum width in *H. donghaiensis*; 22 times in *H. malayensis*, cf. Ihle 1913:pl. 2, figs. 13–15). In addition, the P5 of *H. donghaiensis* (Fig. 3e) is proportionately longer, with the merus, when articulated above the carapace, reaching to the base of the gastric spine (vs. reaching to below the anterolateral spine in *H. malayensis*, cf. Ihle 1913:pl. 2, figs. 13–15); and the distal part of the male first pleopod is relatively stouter (Fig. 3h) (vs. more slender in *H. malayensis*, cf. Ihle 1913:fig. 31). The specimen figured by Nagai (1994:50, pl. 1, fig. 3) from Kii Peninsula in Japan appears to be closer to *H. malayensis* sensu stricto with regards to its relatively shorter legs, although it should be re-examined.

The holotype specimen of *H. donghaiensis* was trawled from some 900 m. The related *H. malayensis* has been recorded from a depth range of 769–1190 m (Guinot & Richer de Forges 1995).

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